

ICT and Education

SENEGAL



Introduction

Senegal is located on the westernmost point of the African continent, along the Atlantic Ocean. With a surface area of 196,722 km² (75,955 sq mi), it is bounded by Mauritania to the North, Mali to the East, Guinea and Guinea-Bissau to the South, and 500 km of Atlantic Ocean coastline to the West. The Gambia forms a partial-enclave within Senegal, extending more than 300 km inland (and separating the region of Casamance from the rest of the country).

Dakar, its capital, is on a peninsula located in the far West, which extends over 550 km².

Senegal Facts and Statistics

Surface Area	196, 722 km ²
Population	10,564,303 (2004)
Education rate (elementary education)	82 .5%
Literacy rate	39.3%
Number of students in elementary school in 2005	1,444,163
Number of students in middle school in 2005	311,863
Number of students in high school in 2005	89,187
Life expectancy at birth	51 years
Gross national product per capita	470
Rate of urbanization	41%

Source : Observatoire des politiques des TIC en Afrique¹

EDUCATION SYSTEM

Senegal's education policy is based on Law 91-22, enacted February 16, 2001. It distinguishes between formal and non-formal sectors in the Senegalese educational system.

Formal Education

This concerns a number of levels and types of schooling, composed of preschool, elementary school, middle school, high school, technical and vocational training, and higher education (universities and colleges). Each of these levels exists within both the public sector and the private sector, which has become more diverse and developed, especially at the level of higher education, since the 1990s.

Likewise, special education (integrative and other kinds) is becoming more and more important in the system. Even though its presence is stronger in elementary schools, trends in the development of this sector are towards better coverage of hitherto neglected school-age populations.

Informal Education

The informal education sector refers to literacy development, basic community schools, and less conventional schools (often grassroots). The latter two types of education are under experimentation.

Statistics in School Attendance

Rate of Schooling in Middle Schools (2005):

	School Age Population	Population in School	Percent
Boys	472,597	176,920	37.40%
Girls	505,887	134,943	26.70%
Total	978,484	311,863	31.90%

Rate of Schooling in High Schools (2005):

	School Age Population	Population in School	Percent
Boys	376,264	53,736	14.30 %
Girls	440,438	35,451	8.00 %
Total	816,702	89,187	10.90 %

Source: Situation des indicateurs de 2005 à 2005²

SENEGAL'S NATIONAL ICT POLICY

Policy-makers recognize the value of Information and Communication Technology for Senegal's economic and social development. The Government of Senegal recognizes Information and Communication Technology as a powerful engine for progress in economic expansion and modernization.

Since 2000, the following legal and institutional measures have been taken:

- Definition of a national strategy for developing ICT
- Adoption of a new telecommunications code
- The creation of an Agency in charge of overseeing telecommunications
- The creation of the State Computer Science Bureau
- The creation of a ministry responsible for the promotion of Information and Communication Technology
- Complete liberalization in the telecommunications sector

Additionally, within the strategy for fast-paced development, ICT takes high priority. The Programme National de Bonne Gouvernance (National Program for Good Governance) identified ICT as a valuable instrument for improving productivity in public service, enhanced performance, and modern communication.

Senegal possesses modern telecommunication infrastructures: a completely digitized telephone network as well as an IP (Internet Protocol) network covering a large area of the country. Today Senegal has 25 fixed telephone lines for 1000 residents. In recent years, it has seen a steep surge in mobile telephony, coming to a total of about 2,509,193 users in 2006.

In terms of Internet use and access, Senegal made a huge leap in the last two years—the number of Internet users is estimated at about 100,000.

Internet speed	1.24 GB/s
Number of cellular phone users	2,509,193
• Orange	1,757,287 (September 2006)
• Tigo	751,906 (June 2006)
Number of land-line telephone users	274,054 (September 2006)
Televisions per 1000 people	79
Radios per 1000 people	126
Land-line telephones per 1000 people	25
Cellular phones per 1000 people	31
Personal computers per 1000 people	18.6
Internet users (in thousands)	100
Community Multimedia Centers (CMCs)	24

The sector already plays a significant role in the economic and social development of the country, comprising 7% of the Gross Domestic Product (GDP) and 5.4% in total capital. The will to make communication services one of the vehicles for the country's economic and social development is not new, but has actually been a goal since the mid-1990s.

The President of the Republic of Senegal, the “first in line” in the fight to reduce the digital gap between the North and the South, enacted an in-depth ICT policy in the Senegalese administration. The State Computer Science Bureau's “Government Intranet Project” extends across a 1 GB/s network, linking the different departments through optical fibers. Outside services will be connected to this intranet through wireless connection. The telephone lines between departments will be free, and there will be a shared resource as well as other uses. For communities the Government is working, with the support of UNESCO, towards building Community Multimedia Centers (CMCs), which provide radio broadcast and ICT services.

Senegal's National Policy on ICT in Education

With the Ten Year Education and Training Program (PDEF), the Ministry of Education ("The General Policy Letter for the Education and Training Sector" is planned for the years 2000-2017) envisions promoting information and communication technology for administrative development and the improvement of education.

In terms of strategies and an action plan, the Ministry of Education designed a Plan of Computerization in the educational sector (PDI-Education) which defines, for each of its activities, an action plan as well as an expected budget to modernize Senegal's information system and educational administration for three years (Phase 1).

Four main objectives were recognized by the PDI-Education plan:

- Improvement in communication: The demand for better management of the Senegalese education system requires, first and foremost, improvements in internal communications so as to carry out its missions and responsibilities.
- Improved management of databases: The availability of descriptive data through a projected integrated information system will make it possible to satisfy indicator formats in PDEF reference documents.
- Development of decision-making tools: Tools for making decisions according to each mission, both internal and external (via the Web), will be available to institutions.
- Project sustainability: The introduction of a computing unit will guarantee technical proficiency throughout the entire organization. For this, it will be necessary to establish a sufficient level of autonomy by recruiting consultants and training civil servants.

A computing unit, called CIME (Cellule Informatique du Ministère de l'Éducation) was conceived as a transversal structure, reaching all levels of the administrative hierarchy by way of a central intermediary and computer science correspondents at the levels of head services (divisions and administrations linked to the government), as well as at the levels of Regional Inspections and of two other Ministries concerning education.

CIME was instituted by Ministerial decree and attached the Minister's secretariat. By another decree, dated May 13, 2003, the Minister of Education created a National Commission for the integration of information and communication technologies (COMNITICE) into the school curriculum.

This commission is responsible, in conjunction with the Ministry's Computer Technology Unit, for promoting the use of technology as a tool for teaching and learning in schools.

Though significant progress has been made for improving the management in terms of administrative organization and human resources, there is currently no official policy in place for integrating ICT into the Senegalese school curricula and the country is still in the promotion phase.

ICT INFRASTRUCTURE

In Africa, the Senegalese educational sector is ahead in implementing advantageous Internet utilization. Multimedia supported instruction, distance education, and distance access to scientific information all constitute significant assets for those seeking to advance their knowledge.

It is a fact, however, that there is a great need for resources to support the equipping of schools with computer technology, whether it is for management or teaching purposes.

Cost-reduction policies: Ministry of Education - Private Sector Partnership –

Partnerships in matters of ICT cover the areas of computer hardware and networks as well as the digitalisation of content and training. The main private partners of the Ministry of Education (ME) are SONATEL (the National Telecommunications Company and subsidiary of France Telecom), Cisco, and Microsoft.

The ME-SONATEL Partnership

An agreement exists between ME and SONATEL whereby schools get a 75% rebate on Internet service.

An addendum to this agreement signed in 2004 grants a 50% reduction on subscription fees, and monthly payments for ADSL lines. The monthly payment for a 256 K ADSL now stands at 14,500. SONATEL also supports education through its foundation.

ME-CISCO Partnership

In Senegal, Cheikh Anta Diop University Computation Center has hosted the Regional CISCO Academy since 2003. The academy was established through a joint partnership between Cisco Systems, USAID, UNDP, and the State Directorate for Computer Technology. Eleven other academies operate in middle and high schools, and in vocational schools throughout Senegal. For a fee, they offer students and community members a combination of distance and conventional training. The distance education platform is supported by CISCO's website (CISCO Networking Academy Program—CNAP). In all of these centres, CISCO offers practical training that equips students with the skills needed to design, implement, and operate small or medium scale IP networks.

The pre-requisite for a CISCO academy is the availability of computer equipment. This equipment is generally provided within the framework of a project pursuing pedagogical goals, but used additionally for the training activities of the Cisco academy. The resource people with the most experience are often used as trainers. The outcomes of this training are very positive since graduates find employment as network technicians. There is indeed here a well found balance between pedagogical and technical training goals.

The ME-Microsoft Partnership

Partnership in Learning, a protocol between Microsoft and the Ministry of Education was signed in October 2004. The partnership would make available computer software at a reduced price, develop a Web portal for teachers, and organize a series of training workshops. USAID also partnered with Microsoft in order to optimise the cost of its support for the Senegalese education system: equipping schools, setting up ICT structures in education; partnerships between ME and NGOs and other development partners. Despite the important issues facing education (access, gender equity, quality), and the economic odds, the government is resolutely committed to the use of ICT in education.

Equipment Support to Schools

NGOs such as World Links and GEEP (Group for Studying and Teaching Population) have long been active in providing equipment to schools. The provision of equipment to schools is also supported by different other partnerships. To date, many high schools are computer equipped and have Internet access. Middle and elementary schools, however, are not so well equipped.

Within preschool, the initiative *La Case des Tout-Petits* launched by the Head of State has made it possible for 50 such preschools to be equipped with computers. There is thus a significant penetration of computer equipment into the Senegalese school system.

MAJOR INITIATIVES AND CURRENT PROJECTS

In Senegal, ICT are considered a catalyst for development. They ensure better access to and availability of recent information, thus improving the level of knowledge among people.

In education, students and teachers expect a significant qualitative impact of ICT on the modes of teaching and learning; they also expect ICT to allow access to information that improves courses and facilitates exams preparation.

ICT can also boost research and the acquisition of new knowledge. This dimension of ICT founds considerable expectation in the midst of the education community in Senegal.

The current socio political atmosphere is very favourable to the dissemination of ICT in education, yet some obstacles persist:

- The national ICT policy is not clearly articulated.
- The official curricula do not take computer technology into account.
- The budgets allocated to schools do not cover computer technology.

Despite the above obstacle, some inroads are discernible; they are among others the development of partnerships with the private sector, NGOs, and development agencies with a view of generalising the provision of computer equipment to schools, setting up ICT, training teachers, and developing digital content..

Some innovative initiatives have been achieved:

The African Virtual University, UVA, is now an intergovernmental organisation disseminating in collaboration with other African higher education institutions training courses. It provides distance learning courses in support to local institutions, thus improving course offerings in response to an ever increasing demand.

The “Sinkou” cyber campus, costing a total of 1.2 million FCFA, consists of an impressive computer lab equipped with 500 state-of-the-art Dell computers (Pentium 4, flat-screen). A high-speed Internet connection through a Vsat antenna opens students up to a world that allows them to enhance their studies and further their research.

In its second phase, a project that includes Gaston Berger University in Saint-Louis, the Community Colleges in Thiès, Ziguinchor and Bambey, as well as different professional training institutes, high schools and middle schools, will amount to 5 billions FCFA.

Concerning the introduction of ICT in education, initiatives have already been taken by:

- GEEP (Group for Population Studies and Education)
- World Links Senegal
- Microsoft: Partners in Learning
- SchoolNet Senegal

ICT IN EDUCATION PROJECTS IN SENEGAL

Institutions	Programs / projects
NATIONAL INSTITUTIONS	
MEN	<p>PDEF (March 2003 version), number II-6 : global strategies for an action plan: Extending the use of ICT by:</p> <ul style="list-style-type: none"> • Connecting schools to the Internet • Developing computer skills training • Using ICT to improve teaching and learning processes • Using ICT to oversee schools engaged in achieving quality • Designing and implementing a framework for information sharing
MEN / DEE	ICT component of DEE action plans for 2005-2007 (phase 2 PDEF)
ME / DEMSG	<p>ICT component of DEMSG action plans for 2005-2007 (phase 2 PDEF)</p> <p>SONATEL agreements (special rates for Internet connection, recently ADSL)</p>
ME / CIME	Plan for ICT development (see document on “SDI report, February 2004) Contract with Microsoft
ME / DEMSG / RESAFAD-TICE	<p>DUCM</p> <p>Development of collaborative work spaces</p> <p>Development of digital content</p> <p>Establishment of Local Multimedia Centers; The center in Thiès is currently running.</p> <p>FAD directors</p>
ME / CIME / DEE / CNFIC	Plan to integrate computer technology into school curriculum (the project was conceived in January 2002, but it apparently lacks follow-through.)
ME / COMNITICE	Commission created on May 13, 2003; in charge of reflecting on ICT in teaching/learning in school.
UCAD	<p>UVA (World Bank)</p> <p>Dakar’s digital francophone campus</p> <p>Cyber Campus Project (a partnership between the State, Sonatel, and Salta Service International): to establish a network of interuniversity and interschool telecommunication (hosted by the UCAD library, BU)</p> <p>DUCM (RESAFAD-ICTE)</p> <p>University Information Network Project</p>
ENS	<p>The Computer-Education Laboratory offers basic training in computers to the students and teachers of ENS.</p> <p>The UNESCO Program in educational sciences (CUSE) delivers a program for a Bachelor’s Degree and a Master’s in Educational Science.</p> <p>The Center for the Application, Study, and Resources in Distance Learning (CAERENAD) is a program financed by the ACDI. In addition to ENS, it serves universities in Brazil, Canada, Chile, Costa Rica, and Mauritius. Among the fifteen or so projects that involve the program, it is the Multi-Partnership 1 Project (PMP1) that allows teachers from partner countries to receive qualifying training through ICT.</p>

EBAD (School of Librarians, Archivists, and Record-Keepers)	A project called FORCIIR, a virtual “West African” class, launched from Dakar in October 2001. Made possible through distance education, it offers a degree in Information Sciences for EBAD. ADVANCED DEGREE IN INFORMATION AND COMMUNICATION SCIENCES (DSSIC)
GEEP (Group for Population Studies and Education)	A project testing the installation of “youth cyber spaces” in middle schools and high schools, in collaboration with the Center for International Research and Development—Canada (CRDI) in the context of the Acacia Senegal Plan, launched in 2000 (see final report for March 2001).
BILATERAL INSTITUTIONS	
ACDI	CÆRENAD Promotes distance education REFORMA Supports access to instructional resources ACACIA Promotes ICT use among youth and women
USAID	PAEM/CLASS : A project for incorporating ICT education in middle school curriculum in the regions of Fatick, Kolda, and Tambacounda.
JICA	Distance training for school principals and directors.
MULTILATERAL COOPERATION	
UNESCO-BREDA	University of the Future GT-EDAL ADEA Distance training for substitute teachers (ENS)
AUF	DESS UTICEF Digitized campus
World Bank	World Links : Founded by the Bank in 1997: Setting up networks and equipment in various institutions (currently an NGO) UVA Renovation and computerization of the UCAD Library
ESMT	ESMT (Multinational School of Telecommunications) offers distance training in order to reach its goal, which is to broaden its services and to benefit from those occasions that offer information and communication technology.
NEPAD	e-School Project Three main steps for 16 countries, including Senegal: <ol style="list-style-type: none"> 1. install NICT materials (New ICT) in schools, including the associated software; 2. train teachers before and during employment how to use this technology in order to cultivate an understanding of ICT in the students, and to also prepare and take advantage of educational materials concerning other subjects; 3. use ICT for the purpose of developing relevant teaching materials

	and making them available to schools and teachers.
OTHER INITIATIVES taking place within the context of promoting educational opportunities and protecting the right of private organisations, individuals, and communities to support the expansion of educational opportunities)	
City of Fatick	Creation of a multimedia resource center at Khar Ndoffène Diouf Middle School, through a partnership with Veolia, and HP. RESAFAD/Senegal trains trainers.
UNESCO CMC Scale-Up Project	Through this project, which occupies the informal education sector, 24 Community Multimedia Centers (CMCs) have been set up, and hundreds of thousands of people living in remote rural areas can now access community radio, computers with Internet connection, and digital devices. The CMCs constitute the most important network of community access to information and communication technology. ³
FAWE NGO	Aims to make of the main middle school in Diourbel a place of excellence, thanks to the Internet.
Various Initiatives, GIS	Dyna Entreprises, for example, gives computers to schools to help improve their management. See also private operations such as GIS (Computerized School Generation), which, after meeting with one school, installed used computers and organized trainings.

ENABLING AND CONSTRAINING FACTORS IN ICT USE

Factors favoring the implementation of a national ICT policy for Senegal are related to the boom in mobile telephony and the multiplication of operators in the telecommunications sector.

In education, Senegal is ahead in the integration and use of ICT in schools. This is indicated by tangible facts such as the development of teaching content, follow-up by educational administrators, and intensification in the use of ICT at different teaching levels.

However, it is important to note that ICT is not yet widely used as a source of gaining new knowledge. The problem of access to ICT and high-quality content arises.

The problems identified are:

- Computers available (the computer to student ratio is still low)
- Functioning of sites: the lack of power supply and telephone coverage in the countryside is a limiting factor.
- The level of computer proficiency among users and specialists is an issue.
- The computer network is more complex.
- Lack of equity in students' access to ICT in schools; only students who can afford fees of up to 5000 CFA can receive 1 to 2 hours of computer classes per week.

CONCLUSION: the general situation of ICT use in various sectors of education in Senegal

It has been shown that Information and Communication Technology can be used to increase access to educational programs, while improving their quality. Senegal's hands-on commitment to incorporating ICT in education is still in the beginning stages of progress and evaluation. Though Senegal's public officials and government bodies recognize ICT as a powerful engine for progress in economic expansion and modernization, it is not yet integrated into any kind of formal policy. However, the Ministry of Education and several organizations have taken initiatives to launch and continue a number of activities that will facilitate the modernization of schools and other educational institutions. A number of initiatives have also been made in the informal sector, such as the UNESCO Community Multimedia Center Scale-Up Project, to make ICT accessible to community members. Although obstacles remain and lie in problems of need for more telecommunications infrastructure, the need for computer materials, and the cost of such materials, the outlook for integrating ICT into Senegal's education system is very optimistic.

Senegal's education system has a lot to gain from the use of this technology, which enables both teachers and learners to access an unlimited source of knowledge, to build knowledge and to stir their imaginations. It can be used as a means to access new programs, expand learning opportunities, and introduce innovative teaching methods. ICT can help spark and develop the skills and interests of young generations by means of new media, and can help these students prepare for their post-secondary education and future careers. What's more, it encourages people to interact and exchange their experiences, which are the most important factors for intellectual enrichment.

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